CONCHOECIA PSEUDOPARTHENODA (NOV. SP) A NEW HALOCYPRID OSTRACOD FOR THE TROPICAL NORTH ATLANTIC

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INTRODUCTION

In the Spring of 1968 a series of horizontal tows were made by R.R.S. Discovery at station 6665 to study the vertical distribution of planktonic animals at 10° 16′ N, 19° 47′ W. A new *Conchoecia* species belonging to the *magna* group and very closely related to *C. parthenoda* Müller 1906 occurred in the near surface hauls. The species is described here and named *Conchoecia pseudoparthenoda*.

Conchoecia pseudoparthenoda n. sp.

The type specimens were from haul 36 at station 6665 from a depth of 25 m at 1637–1715 hrs on 26 February 1968, position 10° 16′ N, 19° 47′ W. They are deposited mounted on slides in the British Museum (Natural History), male No. 1971.2.1.5, female No. 1971.2.1.6.

Male. The range in carapace length of 120 specimens was 1·56–1·72 mm with a mean of 1·637 ± 0·037 mm. The outline of the carapace (Fig. 1A) is similar to that of *C. parthenoda* Müller (Deevey 1968, Angel 1969a). The position of the left asymmetrical gland is quite distinctive; in the type specimen it opens 0·48 mm anterior of the posterior carapace hinge. The right asymmetrical gland opens at the usual position on the posterior ventral corner. Fine spines occur along the dorsal surface of the carapace in the region of the hinge line, and on the edges of the valves from below the rostral incisure to about the midpoint of the ventral side.

Frontal organ. The shaft extends to level with the end of the limb of the first antenna (Fig. 1B). The capitulum is down-turned, its posterior edge is almost straight and carries spines down the proximal two thirds (Fig. 1C). The anterior edge is slightly concave so that the capitulum is narrowest in its middle region, and carries a few spines near its base. The end of the capitulum is rounded.

First Antenna. The two basal segments are sub-equal and bare (Fig. 1B). The **a** seta lies back parallel with the limb reaching level with or just short of the joint between the two basal segments. The **c** seta is short. The **b** seta carries nine fine spines level with the distal end of the armature on the **e** seta (Fig. 1D), whereas the **d** seta carries about 27 fine spines. The **b** seta is only slightly shorter than the **d** seta, which is only just shorter than the **e** seta. The **e** seta armature consists of 9 to 10 paired spines followed by 22–26 alternating spines, with a total range of 40–44 spines (Fig. 1D). The **e** seta also has a few scattered spines on its anterior leading edge close to its base.

Second Antenna. The protopodite is more than half the length of the carapace

and three times the first exopodite segment (Fig. 1E). All the exopodite segments are bare. The longest swimming seta is two fifths the carapace length. On the endopodite, the **a** seta is bare and curves back behind the **b** seta (Fig. 1G). The **b**

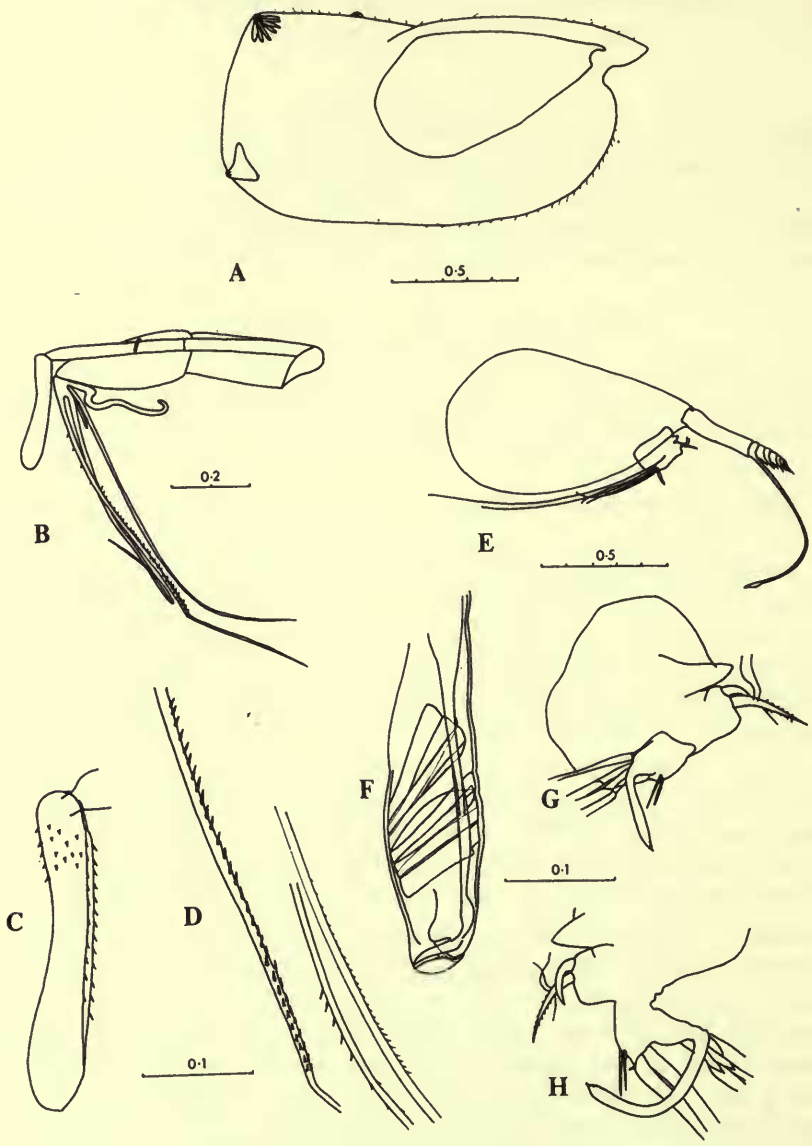

FIG. 1. *Conchoecia pseudoparthenoda* male. A. Outline of carapace. B. Frontal organ and first antenna. C. Capitulum of frontal organ. D. Detail of armature of the antennular **e, b** and **d** setae. E. Second antenna. F. Copulatory organ. G. Endopodite of the left second antenna. H. Endopodite of the right second antenna.

seta carries three long hairs near its base and fine spines distally. The processus mamillaris is bluntly pointed. The **c** and **d** setae are sub-equal and rather short. The **e** seta is minute. The **g** seta is almost as long as the protopodite and the **f** seta is similar in length to the longest swimming seta. The **h**, **i**, and **j** setae are half the length of the **f** seta and about two-fifths the length of the **g** seta. They have weakly developed shafts. The right hook appendage is right angled near its base, curves through a further 90° half way along its length ending in a point with subterminal ridging (Fig. 1H). The left hook appendage is bent through less than a right angle near its base and is then straight (Fig. 1G). Towards its end it narrows and terminates in a curved point with subterminal ridging.

Mandible. The basal segment is long (Fig. 2C). The first exopodite segment carries two setae on its inner edge, one twice the length of the other. The toothed edge of the pars incisa has two spine teeth followed by six broad finely serrated teeth, and a single inner broad tooth (Fig. 2B). Hairs are inserted near the bases of the spine teeth and the outer setae. These setae project only just beyond the level of the teeth. The coxale toothed edge has ten bluntly pointed teeth (Fig. 2A). The distal tooth list has two large teeth; the second is serrated and followed by 13 small blunt teeth. The proximal list has about 14 irregularly sized teeth.

Maxilla. The basal segment carries a seta (Fig. 2D). The first endopodite segment has six anterior, one lateral and three posterior setae. There is a group of about six short spines at the end of the segment.

Labrum. This is the usual shape for the *magna* group (Fig. 2E).

Caudal Furca. The furca has eight pairs of hook spines (Fig. 2F). The first pair does not reach the level of the ends of the second pair. There is no unpaired posterior seta.

Copulatory organ. This has eight oblique muscles (Fig. 1F). The terminal edge which curves in and over the intromittent spine is serrated.

FEMALE. The range in length of 222 specimens was 1·72–1·90 mm with a mean of 1·841 ± 0·038 mm. As in the male the left asymmetrical gland opens 0·48 mm anterior of the posterior hinge, and the right gland on the posterior ventral corner (Fig. 3A). Fine spines occur on the dorsal surface in the vicinity of the hinge line and round the ventral edges of the valves in the anterior half. In many specimens there were concentric striations clearly visible over the whole of the carapace.

Frontal organ. It is straight with no separation into shaft and capitulum (Fig. 3B). It terminates in a long downturned point. There are a few spines on its ventral edge (Fig. 3C).

First Antenna. The segmentation of the limb is indistinct. The long spinous dorsal seta reaches almost level with the tip of the frontal organ (Fig. 3B, C). There is a group of spinules close to the insertion of the **e** seta. The **e** seta is twice the length of the limb and carries spines on its trailing posterior edge distal of the ends of the other setae. The other four setae are a third the length of the **e** seta.

Second Antenna. The protopodite is just less than half the carapace length and nearly three times the length of the first exopodite segment (Fig. 3D). All the exopodite segments are bare. The longest swimming seta is three quarters the length of the protopodite. On the endopodite the **a** seta is half the length of the

b seta, and both are finely spinous (Fig. 3E). The processus mamillaris has a small pointed tubercle at its tip. The **g** seta is just over half the length of the protopodite. It is unflattened and carries fine spinules near its tip. The **f** seta is only a little longer than the **h**, **i** and **j** setae which are two thirds the length of the **g** seta.

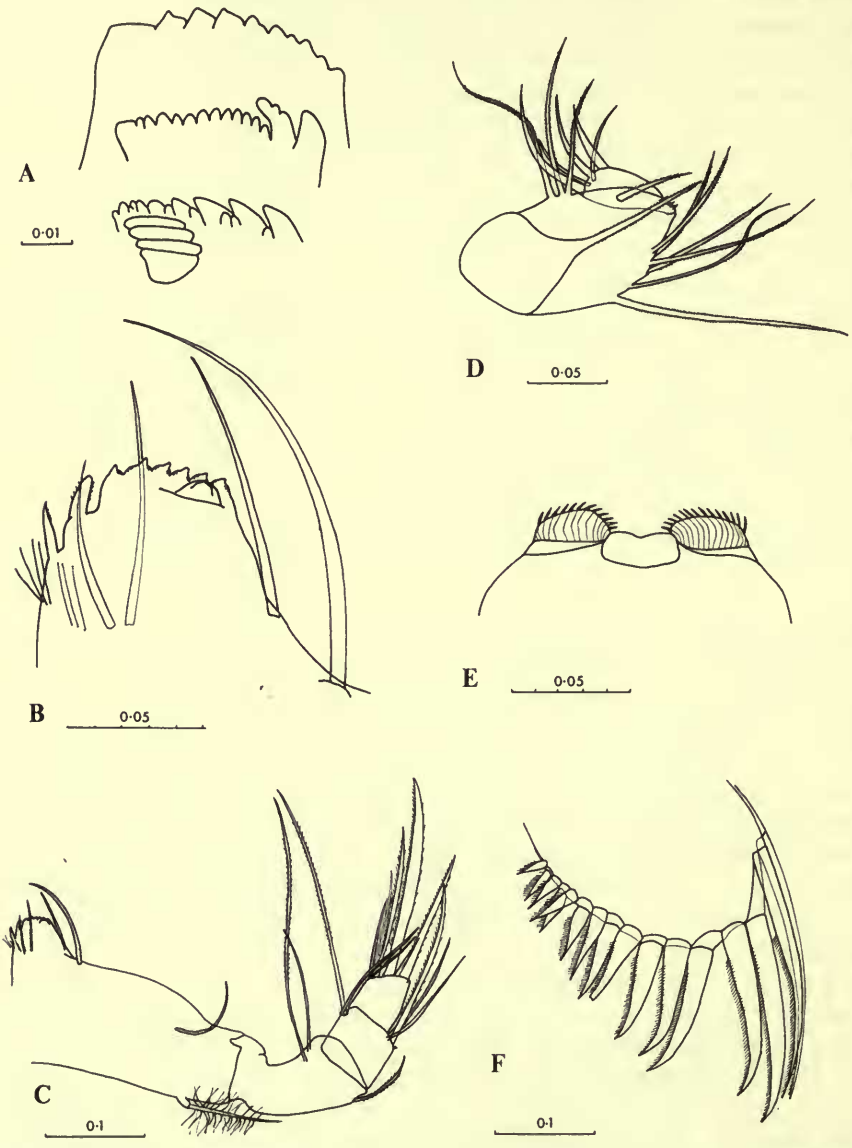

FIG. 2. *Conchoecia pseudoparthenoda*. A. Toothed edge of coxale and tooth lists of the mandible. B. Toothed edge of the mandibular basale. C. Endopodite of the mandible. D. Maxilla endopodite. E. Labrum. F. Caudal furca.

JUVENILES. Two juvenile stages were recognised from the hauls by the position of the left asymmetrical glands. The smallest group consisting of 106 specimens ranged in size from 0·86–0·96 mm with a mean of 0·903 ± 0·022 mm. The final stage juveniles ranged in size from 1·22–1·34 mm with a mean of 1·286 ± 0·026 mm for 163 specimens.

COMPARISON BETWEEN *C. pseudoparthenoda* AND *C. parthenoda*. In the females, *C. pseudoparthenoda* often has more distinctive sculpturing and the posterior ventral region of the carapace is more strongly developed. In both sexes the left asym-

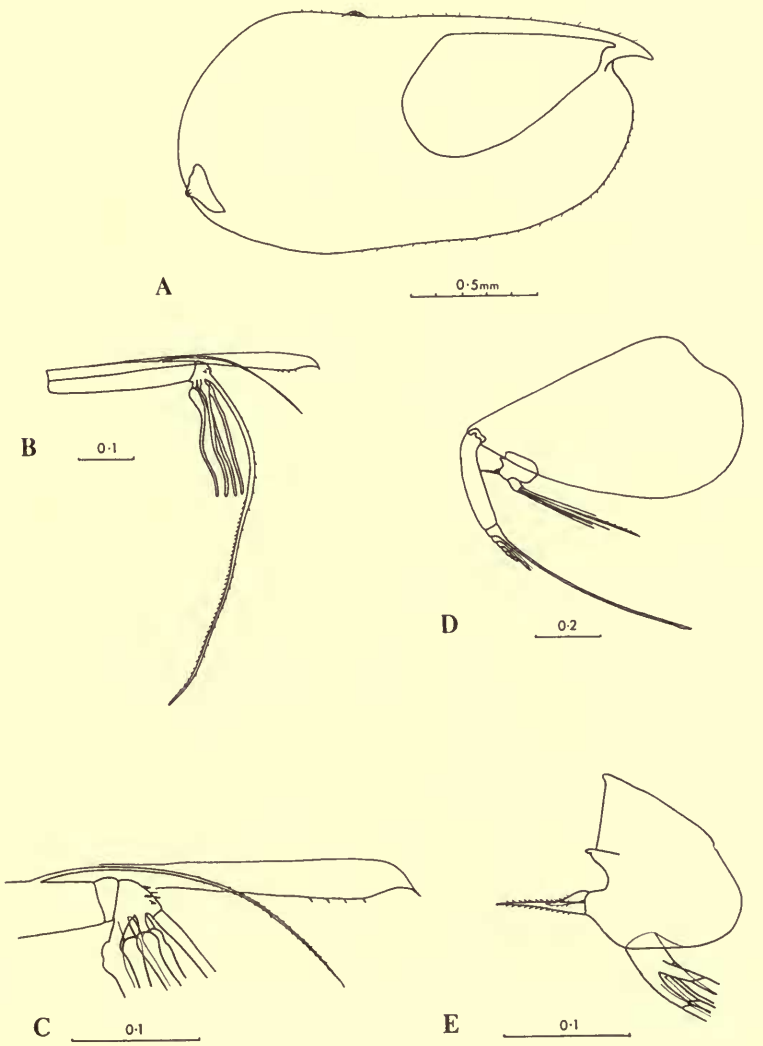

FIG. 3. *Conchoecia pseudoparthenoda* female. A. Outline of carapace. B. Frontal organ and first antenna. C. Details of frontal organ and the end of the first antenna. D. Second antenna. E. Endopodite of the second antenna.

metrical gland is 0·48 mm anterior of the posterior hinge, and this is diagnostic of the species; in *C. parthenoda* the gland opens 0·24 mm anterior of the posterior hinge. The carapace breadth is less in *C. pseudoparthenoda*. The shapes of the frontal organs of the females of the two species are quite distinct. The dorsal seta of the first antenna is shorter in the female of *C. parthenoda* and this species has no spinules at the insertion of the first antennal **e** seta, also the **e** seta is relatively longer. Similarly the exopodite segments and the endopodite setae of the second antennae of the females are all relatively longer in *C. parthenoda*. A comparison of the lengths of the various setae and other meristic characters of the two species are shown in Table 1.

In the males *C. parthenoda* has a longer **b** seta on the first antenna and a shorter **c** seta; the **b** and **d** setae carry more spines. The antennular **e** seta armature usually consists in both species of nine pairs of distal spines. In *C. parthenoda* the paired spines are followed by about 18 alternating spines; giving a total range of 35–38 spines. In *C. pseudoparthenoda* the paired spines are followed by about 24 alternating spines; giving a total range of 40–44 spines.

On the mandibles the proximal tooth lists are quite distinct; *C. parthenoda* having three large teeth and 16 smaller teeth, and *C. pseudoparthenoda* 14 irregular teeth. On the caudal furca *C. parthenoda* has an unpaired dorsal seta but *C. pseudoparthenoda* has none. The live colouration of the two species is similar, for the most part they are transparent and colourless or very pale red. The anterior ventral edges of the carapace valves are yellow, and the pharyngeal region is yellow or orange.

Bioluminescence has not been observed in either of the two species.

DISCUSSION

At station 6665 *C. pseudoparthenoda* predominated over *C. parthenoda* at 25 m, but *C. parthenoda* was the more numerous in the 50 m and 75 m hauls. Both species were virtually restricted to the surface 100 m. *C. pseudoparthenoda* was absent from the plankton off Fuerteventura (Canary Islands) and the Moroccan coast (Angel 1968, 1969b), but Deevey (personal communication) has found what is probably this species to be a rare member of the plankton off Bermuda. *C. parthenoda* was common in all these areas.

Poulsen (1969) has recently described a male specimen from the Congo region with the gland openings of the left asymmetrical gland 0·38 mm from the posterior dorsal hinge (see his figure 10 and table p. 154). The females, however, had gland openings 0·27 mm from the hinge. The carapace lengths of all his specimens were slightly larger than described here for *C. pseudoparthenoda*, and appreciably longer than for *C. parthenoda*. His description of the male antennular **e** seta armature makes no mention of the distal spines being paired, and the total counts are considerably lower than for either *C. parthenoda* or *C. pseudoparthenoda*. It seems unlikely from his description that Poulsen's specimens belonged to either of these species.

C. pseudoparthenoda appears to have an equatorial distribution in the Atlantic and may prove to be endemic to this region.

Table 1

Comparative table of meristic characters of *C. pseudoparthenoda* (n. sp.) and *C. parthenoda* Müller; data for *C. parthoneda* Müller from Angel 1969a. All values, apart from the range and mean of carapace lengths, are the means of twenty specimens and are expressed as percentages of the carapace lengths.

	C. parthenoda Müller		*C. pseudoparthenoda* (n. sp.)	
	♀	♂	♀	♂
Carapace				
Length range mm	1·575 — 1·750	1·450 — 1·600	1·720 — 1·900	1·560 — 1·720
mean	1·671 ± 0·033	1·520 ± 0·028	1·841 ± 0·038	1·637 ± 0·037
Length %	100	100	100	100
Height	50·03 ± 1·29	48·01 ± 1·08	49·24 ± 0·84	48·20 ± 2·18
Breadth	39·52 ± 1·33	45·00 ± 1·09	36·54 ± 1·14	41·85 ± 1·53
Frontal Organ				
shaft	29·85 ± 1·02	40·84 ± 1·07	29·60 ± 0·79	41·39 ± 0·90
capitulum		17·11 ± 0·76		17·08 ± 0·59
First Antenna				
Segment 1		19·12 ± 0·45		19·84 ± 0·38
,, 2		18·62 ± 0·36		19·51 ± 0·51
Total limb	16·83 ± 0·45	39·72 ± 0·55	17·06 ± 0·24	39·80 ± 0·82
a seta	12·98 ± 0·43	18·44 ± 1·25	12·86 ± 0·57	17·96 ± 1·04
b seta		53·46 ± 1·18		51·26 ± 0·97
c seta		6·14 ± 0·23		7·10 ± 0·33
d seta		54·08 ± 1·21		52·69 ± 1·03
e seta	37·31 ± 1·12	57·46 ± 1·00	35·86 ± 1·00	56·09 ± 0·96
dorsal seta	14·80 ± 0·71	—	15·19 ± 0·64	—
Second Antenna				
Protopodite	46·98 ± 0·80	53·69 ± 1·19	46·24 ± 0·64	54·56 ± 0·84
Exopodite segt. 1	16·91 ± 0·31	18·28 ± 0·38	16·00 ± 0·45	18·52 ± 0·40
,, ,, 2–8	7·01 ± 0·12	7·93 ± 0·24	6·80 ± 0·17	7·59 ± 0·16
g seta	26·48 ± 0·79	53·61 ± 0·99	24·52 ± 0·98	52·83 ± 0·94
f seta	18·55 ± 0·66	40·85 ± 0·81	17·22 ± 0·51	40·26 ± 1·10
h, i, j seta	17·44 ± 0·56	21·04 ± 0·64	15·78 ± 0·45	19·68 ± 0·83
longest swimming seta	36·95 ± 0·82	40·89 ± 1·22	35·57 ± 0·88	40·73 ± 0·81

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